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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/458,322	12/10/1999	STEPHEN J. ZACK	533/198	8722

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EXAMINER

HUYNH, SON P

ART UNIT	PAPER NUMBER
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2611

DATE MAILED: 06/06/2003

70

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/458,322

Applicant(s)

ZACK ET AL.

Examiner

Son P Huynh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 11-31 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 11-14, 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams (US 6,044,396), and in view of Mao et al. (US 6,459,427).

Regarding claim 11, Adams discloses service source 115 comprising: statistical multiplexer 208 for selectively multiplexing packets in media servers 200 and application server 202 and forwards the multiplexed streams to a modulator 210 for modulating before transmitting over a channel in the network 110 (see figure 2). Adams further discloses transmitting application data and control information in the bandwidth represented by the space between the bit rate trace of the video signal and its

maximum constrained limit. In addition, the channel rate control 1002 controls the rate at which the network controller 204 (see col. 6, line 45-col. 7, line 27). However, Adams does not specifically disclose transmission content via high speed asynchronous serial interface (HS-ASI) communication channel and formatting the received data for use by the communication channel.

Mao teaches transmission content via high speed asynchronous serial interface communication channel 210 (see figure 2) and formatting the data received by server 80 to DVB ASI for use by the communication channel (see figure 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Adams to incorporate the feature as taught by Mao in order to provide an efficient transmission of programs.

Regarding claim 12, Adams discloses statistical multiplexer 208 includes numbers of video buffers 400 for receiving encoded video streams from the media servers 200 and at least on application buffer 402 for receiving the application data stream from the network controller 204. The selector 404 allocates the application data stream to a low priority access to the network. The selector 404 selects data from the video buffers 400 in a conventional round robin fashion to ensure fair allocation to the network 110. If and when all video buffers 400 are empty, the selector 404 passes data from the application buffer 402 to the output buffer 406. The selector will continue

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reading from the application buffer 402 until data is detected in one or more of the video buffers 400. At that time, the selector 404 will again read from the video buffers 400 in round robin fashion (see col. 4, line 34-col. 5, line 8). Adams further discloses channel rate control 1002 for controlling the rate of the application data based upon the rate of the video stream (see figure 9 and col. 8, lines 64-67). Inherently, Adams teaches a switch controller, for determining a bandwidth utilization level of the switch and responsively causing at least a portion of the non-content data stored in the buffer to be multiplexed into the output stream when the bandwidth utilization level falls below a threshold utilization bandwidth level.

Regarding claim 13, Adams discloses application data and control information are not as sensitive as video data to transmission delay and dropped packets; therefore, these data can be transmitted in the bandwidth represented by the space between the bit rate trace of a video signal and its maximum constrained limit C_m (see col. 6, line 65-col. 7, line 3). Adams further discloses selector 404 selects data from video buffers 400 in a conventional round-robin fashion to ensure fair allocation to the network 110. This scheme precludes one video stream from preventing others from meeting the real time constraints of the video display (see col. 4, line 52-col. 5, line 8). Inherently, Adams teaches the threshold bandwidth utilization level comprises a utilization level sufficient to process a single time extent; the content streams being divided into a plurality of respective time extent.

Regarding claim 14, Adams discloses the servers retrieve stored digital media from the vaults and implement other commands in response to requests from the home terminal node. The multiplexer 208 selects the packets or ATM cells to be forwarded to a modulator 210 (see figure 2). Inherently, Adams teaches each of the content streams provided by the server modules to the switch is divided into a plurality of respective time extents; and the switch is capable of multiplexing a predefined number of time extents into the output stream.

Regarding claim 17, Adams teaches the non-content data comprises control data (control information) and non-control data (application data), the switch (multiplexer 208) preferentially multiplexing the non-content control data over the content data (see col. 6, lines 65-66 and figure 2).

Regarding claim 18, Adams teaches the non-content data comprises control data (control information) and non-control data (application data), the switch preferentially multiplexing the non-content control data over one of the content data or the non-content non-control data (see figure 2).

Regarding claim 19, Adams teaches the switch preferentially multiplexing the non-content control data over the non-content non-control data (see figure 2).

4. Claims 11- 22, 24-27, 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arazi et al. (US 5,966,120), and in view of Son et al. (US 6,240,553).

Regarding claim 11, Arazi et al. (hereinafter referred to as Arazi) teaches a server apparatus comprising: a switch (program multiplexer 110, Aux. data insertion controller 200 and program map), for multiplexing each of a plurality of content streams provided by respective server modules to produce an output stream for transport via communication channel; the switch receiving non-content data (auxiliary data) from a data source (Aux. Data Storage 130) and responsively multiplexing the non-content data into the output stream on a bandwidth availability basis (see figure 1). However, Arazi does not specifically disclose transmission of HS-ASI formatted non-content data into an output stream.

Son teaches transmission of HS-ASI formatted non-content data into an output stream (see col. 3, line 20+). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Arazi to incorporate the feature as taught by Son in order to provide an efficient transmission of programs.

Regarding claim 20, Arazi et al. (hereinafter referred to as Arazi) teaches an apparatus comprising: a switch (program multiplexer 110, Aux. data insertion controller 200 and program map), for receiving content data streams from each of a plurality of server modules and multiplexing the content streams to form an output stream, each of

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the content data streams comprising a plurality of extents, each of the extents defining a respective content portions (see figure 1 and col. 4, lines 22-35); The primary programs are encoded in MPEG format (see col. 5, lines 60-63); the Auxiliary Data are extracted from the Distribution Auxiliary Data Storage 130 by the Distribution Storage Controller 120 and combined with the Primary Video Data Stream by the Auxiliary Data Insertion Controller 200 (see col. 6, lines 40-44 and figures 1-2). Thus, the primary programs are encoded in MPEG format and the auxiliary data are stored as non-format data.

Inherently, the apparatus comprises a format converter, for converting non-content data from a first format into a second format (MPEG), the second format being compatible with a format of the content streams; and a controller, for receiving the non-content data in the first format and for causing the switch to insert corresponding non-content data of the second format into the output stream. However, Arazi does not specifically disclose transmitting content data streams along a high speed asynchronous serial interface and formatting non-content data for use by the HS-ASI communication channel

Son teaches transmitting content data streams along a high speed asynchronous serial interface and formatting non-content data for use by the HS-ASI communication channel (see col. 3, line 20+). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Arazi to incorporate the feature as taught by Son in order to provide an efficient transmission of programs.

Regarding claim 29, Arazi teaches a method comprising:

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multiplexing a plurality of content stream portions to produce an output stream, the output streams being adapted to a forward application transport channel (FATC); transmitting the output stream via the FATC; determining if the FATC has associated with it a bandwidth utilization level below a threshold level; and inserting, into the output stream, non-content data in response to available FATC bandwidth (see figure 1). However, Arazi does not specifically disclose HS-ASI channel formatted non-content data.

Son teaches HS-ASI channel formatted non-content data (see col. 3, line 20+). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Arazi to incorporate the feature as taught by Son in order to provide an efficient transmission of programs.

5. Claims 11- 27, 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arazi et al. (US 5,966,120), and in view of Mao et al. (US 6,459,427).

Regarding claim 11, Arazi et al. (hereinafter referred to as Arazi) teaches a server apparatus comprising: a switch (program multiplexer 110, Aux. data insertion controller 200 and program map), for multiplexing each of a plurality of content streams provided by respective server modules to produce an output stream for transport via communication channel; the switch receiving non-content data (auxiliary data) from a data source (Aux. Data Storage 130) and responsively multiplexing the non-content

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data into the output stream on a bandwidth availability basis (see figure 1). However, Arazi does not specifically disclose transmission content via high-speed asynchronous serial interface (HS-ASI) communication channel and formatting the received data for use by the communication channel.

Mao teaches transmission content via high speed asynchronous serial interface communication channel 210 (see figure 2) and formatting the data received by server 80 to DVB ASI for use by the communication channel (see figure 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Arazi to incorporate the feature as taught by Mao in order to provide an efficient transmission of programs.

Regarding claim 12, Arazi teaches the switch comprises a buffer 290 for storing the non-content data, the apparatus further comprising:
a switch controller, for determining a bandwidth utilization level of the switch (detecting for fill packet) and responsively causing at least a portion of the non-contents stored in the buffer to be multiplexed into the output stream when the bandwidth utilization level falls below a threshold utilization bandwidth level (see figure 2).

Regarding claim 13, Arazi teaches the threshold bandwidth utilization level comprises a utilization level sufficient to process a single time extent, the content

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stream being divided into a plurality of respective time extents (see col. 3, line 59-col. 4, line 35).

Regarding claim 14, Arazi teaches each of the content stream provided by the server modules to the switch is divided into a plurality of respective time extents; and the switch is capable of multiplexing a predefined number of time extents into the output stream (see figures 1-2 and col. 4, lines 1-35).

Regarding claim 15, Arazi teaches the bandwidth availability is determined by determining a maximum number of extents capable of being multiplexed by the switch (data packets and fill packets), determining an actual number of extents needed to be multiplexed by the switch (data packets), and defining a difference between the maximal and actual amount of extents to be multiplexed by the switch (fill packets) as an availability bandwidth of the switch (see figures 1-2).

Regarding claim 16, Arazi teaches the non-content data within the buffer is multiplexed into the output stream in place of extents (fill packets) which are not provided by the server modules, the non-content data in the buffer being divided into extent size data portions (see figures 1-2 and col. 4, lines 24-25).

Regarding claim 17, Arazi discloses auxiliary data may be of any general type including additional encoded video data, advertisements, promotional feature or

previews, news and other informational content, or data for computer related applications (see col. 3, lines 1-4). Special signals could be inserted into the Encoded Video program prior to distribution in order to mark the appropriate points for Local Auxiliary Data insertion (see col. 10, lines 10-21). In addition, a program map is inserted into the output stream (see figures 1 and 3). Thus, Arazi teaches non-content data comprises control data (data for computer related applications or special signals) and non-control data (other informational content or program map); the switch preferentially multiplexing the non-content control data over the content data.

Regarding claim 18, Arazi discloses auxiliary data may be of any general type including additional encoded video data, advertisements, promotional feature or previews, news and other informational content, or data for computer related applications (see col. 3, lines 1-4). Special signals could be inserted into the Encoded Video program prior to distribution in order to mark the appropriate points for Local Auxiliary Data insertion (see col. 10, lines 10-21). In addition, a program map is inserted into the output stream (see figures 1-3). Thus, Arazi teaches non-content data comprises control data (data for computer related applications or special signals) and non-control data (other informational content or program map); the switch preferentially multiplexing the non-content control data over the content data or non-content non-control data.

Regarding claim 19, Arazi discloses auxiliary data may be of any general type including additional encoded video data, advertisements, promotional feature or previews, news and other informational content, or data for computer related applications (see col. 3, lines 1-4). Special signals could be inserted into the Encoded Video program prior to distribution in order to mark the appropriate points for Local Auxiliary Data insertion (see col. 10, lines 10-21). In addition, a program map is inserted into the output stream (see figures 1-3). Thus, Arazi teaches the switch preferentially multiplexing the non-content control data non-content non-control data.

Regarding claim 20, Arazi et al. (hereinafter referred to as Arazi) teaches an apparatus comprising: a switch (program multiplexer 110, Aux. data insertion controller 200 and program map), for receiving content data streams from each of a plurality of server modules and multiplexing the content streams to form an output stream, each of the content data streams comprising a plurality of extents, each of the extents defining a respective content portions (see figure 1 and col. 4, lines 22-35); The primary programs are encoded in MPEG format (see col. 5, lines 60-63); the Auxiliary Data are extracted from the Distribution Auxiliary Data Storage 130 by the Distribution Storage Controller 120 and combined with the Primary Video Data Stream by the Auxiliary Data Insertion Controller 200 (see col. 6, lines 40-44 and figures 1-2). Thus, the primary programs are encoded in MPEG format and the auxiliary data are stored as non-format data. Inherently, the apparatus comprises a format converter, for converting non-content data from a first format into a second format (MPEG), the second format being compatible

with a format of the content streams; and a controller, for receiving the non-content data in the first format and for causing the switch to insert corresponding non-content data of the second format into the output stream. However, Arazi does not specifically disclose transmission content via high speed asynchronous serial interface (HS-ASI) communication channel and convert the non-content to HS-ASI format for use by the communication channel.

Mao teaches transmission content via high speed asynchronous serial interface communication channel 210 (see figure 2) and formatting the data received by server 80 to DVB ASI for use by the communication channel (see figure 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Arazi to incorporate the feature as taught by Mao in order to provide an efficient transmission of programs.

Regarding claim 21, Arazi in view of Mao teaches an apparatus as discussed in the rejection of claim 20. Arazi further teaches the switch comprises a data buffer 290 for storing the non-content data of the second format (see figure 2).

Regarding claim 22, Arazi teaches the non-content data comprises at least one of control data (computer related applications or special signal) and non-control data (program map or other information), the controller causing the switch to preferentially insert non-content control data into the output stream (see col. 3, lines 1-5, col. 4, lines 30-35, col. 7, lines 53-67, col. 10, lines 10-21).

Regarding claim 23, Mao discloses on the server site, a HTTP proxy server 170 is provided which contains the particular applications 180 desired to transport. The applications 180 is input to HTTP on the client site where a control block 240 allows the consumer to navigate 250 according to particular protocols 260 and/or IP 270 (see figure 2). Thus, the non-content data comprises an Internet protocol data format.

Regarding claim 24, Arazi teaches the switch preferentially multiplexes content data into the output stream and inserts the corresponding non-content data into the output stream if excess bandwidth is available (see figure 1 and col. 3, line 65-col. 4, line 35).

Regarding claim 25, Arazi discloses program multiplexer 110 ensures the CBR by inserting fill packets into the Primary Video Data Stream whenever its data rate would otherwise less than that of the video distribution channel (see col. 6, lines 16-34); the Aux. Data Insertion Controller 200 detects the length of fill packet and inserts Auxiliary data into the Primary Video Data Stream based on the length of fill packets (see col. 6, line 45-col. 7, line 42). Inherently, the switch communicates a buffer utilization level to the controller, the controller responsively causing the switch to adapt the amount of non-content data inserted into the output stream.

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Regarding claim 26, Arazi discloses the program multiplexer 110 inserts fill packets into the Primary Video Data Stream whenever its data rate would otherwise be less than that of the video distribution channel (see col. 6, lines 27-30). Thus, the preferential insertion is limited. Arazi further discloses the primary programs are real time programs (see col. 6, lines 22-25). Inherently, failure to multiplex content data will result in the degradation of presentation quality of the content data.

Regarding claim 27, Arazi teaches the switch utilizes statistical multiplexing of received packets to predict bandwidth availability (see col. 2, lines 13-47).

Regarding claim 29, Arazi teaches a method comprising:

- multiplexing a plurality of content stream portions to produce an output stream;
- transmitting the output stream via a communication channel;
- determining if the communication channel has associated with it a bandwidth utilization level below a threshold level; and
- inserting, into the output stream, non-content data in response to available channel bandwidth (see figure 1). However, Arazi does not specifically disclose the output stream is being adapted to a high speed asynchronous serial interface communication channel; and inserting, into the output stream, HS-ASI channel formatted non-content data.

Mao teaches the output stream is being adapted to a HS-ASI communication channel 210; and inserting, into the output stream, HS-ASI channel formatted non-content data (see figures 1- 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Arazi to incorporate the feature as taught by Mao in order to provide an efficient transmission of programs.

Regarding claim 30, Arazi teaches the primary programs are real time distributed programs (see col. 3, lines 55-57) and the primary programs are assumed to be divided into segments or packets (see col. 4, lines 24-25). Inherently, each content stream portion comprises a time extent of respective content, the respective content being divided into a plurality of time extents.

Regarding claim 31, Arazi teaches the non-content data comprises one of control data (computer related applications or special signals) and on-control data (program map or other information), the non-content control data being preferentially inserted into the output stream as the non-content data (see col. 3, lines 1-5, col. 4, lines 30-35, col. 7, lines 53-67, col. 10, lines 10-21, figures 1-3).

6. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arazi et al. (US 5,966,120) in view of Mao (US 6,459,427) as applied to claim 27 above, and in view of Gotwald (US 5,987,518).

Regarding claim 28, Arazi in view of Mao teaches an apparatus as discussed in the rejection of claim 27. However, Arazi does not specifically disclose a priority assigned to the non-content data to be inserted into the output stream.

Gotwald teaches a priority assigned to the non-content data to be inserted into the output stream (see col. 2, lines 19-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Arazi and Mao to incorporate a feature as taught by Gotwald in order to improve quality of services.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Dunn et al. (US 6,154,772) teaches system and method for delivery of digital video and data over a communication channel using HS-ASI.


Howe (US 5,818,438) teaches system and method for providing television services.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Son P Huynh whose telephone number is 703-305-1889. The examiner can normally be reached on 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Faile can be reached on 703-305-4380. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the customer service office whose telephone number is 703-306-0377.

Son P. Huynh
May 30, 2003


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